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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/043,808	01/11/2002	Steven Teig	SPLX.P0008	9068

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EXAMINER	
NGUYEN, DAO H	

ART UNIT	PAPER NUMBER
2818	

DATE MAILED: 02/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

NC

Office Action Summary	Application No.	Applicant(s)	
	10/043,808	TEIG ET AL.	
	Examiner	Art Unit	
	Dao H Nguyen	2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *21-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *21-35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 April 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. In response to the communications dated 01/16/2004, claims 21-26 are active in this application as a result of the cancellation of claims 1-20 and 36-47.

Remarks

2. Applicant's arguments filed on 01/16/2004 about the claim rejection of the Office Action mailed 11/01/2002, in light of the newly amended claims 21-35, have been fully considered, but they are not persuasive.

With respect to claim 21, Examiner does not agree with Applicant that "Glenn does not describe "a plurality of conductors . . . wherein at least one conductor comprises at least three wires, the at least one conductor being a continuous conducting segment deposed in a single direction relative to the boundaries of the integrated circuit;" and "wherein, for each conductor that comprises at least three wires, at least 30 percent of the at least three wires are deposed in different directions." As shown in fig. 8C, Glenn does teach a plurality of conductors 26, wherein at least one conductor, the third conductor 26 on the left, from the top, within grid 65 of fig. 8C, for example, having three wires or three segments. The first horizontally wire or segment extends from the left side of the grid 65 to the circular end (26A). The second wire or segment is from the circular end (26A) and slightly upward toward upper right corner of gird 65. The third wire/segment is a continuation/expansion of the second wire, and

going up with a higher slope than that of the second wire and end at (26B). This conductor is a continuous conducting segment which deposed in a single direction from a point on the left side of the grid 65 toward the upper right corner of the grid 65. Further more, since all three wires/segments are pointing to three different directions, therefore, clearly at least 30 percent of the three wires are deposed in different directions.

With respect to claim 26, as shown fig. 8C, Glenn does teach about a metal layer 50 comprising at least two pairs of conductors, the third and the fourth conductors 26 on the left, from the top, within grid 65 of fig. 8C, for example, wherein the conductors 26 comprising at least two wires (as discussed above). The first wire deposed in a Manhattan direction (horizontal direction), the second wire deposed in a diagonal direction (from the circular end (26A) toward the upper right corner of the grid 65). Furthermore, wherein the effective direction of the pairs of conductors 26 does comprise an angle A defined by Tan(A) = Y/X, wherein X is a horizontal line extends from the circular end (26A) to the right, and Y is a vertical line extend from the end (26B) down to "line X"

With respect to claim 35, similarly, Glenn does teach a method having conductors 26 comprising wires deposed in both Manhattan (or horizontal) and diagonal (or from the left side of grid 65 to the upper right corner of grid 65) directions.

Therefore, for the above reasons, the rejection in the previous Office Action is rewritten as follow:

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

4. Claims 21-35 are rejected under 35 U. S. C. § 102 (e) as being anticipated by U.S. Patent No. 6,150,193 to Glenn.

Regarding to claim 21, Glenn discloses an integrated circuit, as shown in figures 7-9, and 13b, comprising:

a metal layer 50 comprising a plurality of conductors 26 to interconnect one or more points on the integrated circuit;

wherein at least one conductor 26 comprises at least three wires ((fig. 8C for example: first horizontal wire from left side of grid 65 to the circular end (26A), second low-slope wire from the circular end (26A), and third higher-slope wire continuing the second wire and ends at (26B)), the at least one conductor being a continuous conducting segment deposed in a single effective direction (from the left side of grid 65 toward the upper right corner of gird 65) measure relative to the boundaries of the integrated circuit, wherein each of the at least three wires is a continuous conducting

segment deposed in a single direction measured relative to the boundaries of the integrated circuit; and

wherein, for each conductor that comprises at least three wires, at least 30 percent of the at least three wires are deposed in different directions.

See figures 7C and 8C, and the above remarks.

Regarding to claim 22, Glenn discloses the integrated circuit, wherein at least one of the different direction is a Manhattan direction (horizontal/vertical direction). See figure 8C.

Regarding to claim 23, Glenn discloses the integrated circuit, wherein at least one of the different direction is a diagonal direction. See figure 8C.

Regarding to claims 24, and 25, Glenn discloses the integrated circuit, wherein the diagonal direction comprises an octalinear or a hexalinear direction. See figure 7C.

Regarding to claim 26, Glenn discloses an integrated circuit, as shown in figures 7-9, and 13b, comprising:

a metal layer 50 comprising at least two pairs of conductors (fig. 8C, third and fourth conductors 26 on the left, from the top, of grid 65, for example) to interconnect one or more points on the integrated circuit, wherein a conductor comprises one or

more wires (horizontal and diagonal wires), each wire being a continuous segment deposed in a single direction, each pair of conductors comprising:

a first wire deposed in a Manhattan (horizontal wire from the left side of grid 65 to circular end (26A)) direction, relative to the boundaries of the integrated circuit, the first wire comprising a first wire length including first and second ends;

a second wire (diagonal wire from end (26A) to end (26B) deposed in a diagonal direction relative to the boundaries of the integrated circuit, the second wire comprising a second wire length including first and second ends, the first end of the second wire being coupled to the second end of the first wire;

wherein, an effective direction (from the left side of grid 65 to the upper right corner of grid 65) of the pairs of conductors comprises an angle, A, measured relative to the boundaries of the integrated circuit, defined by the expression Tan (A) = Y/X;

wherein, Y comprises a line segment with a distance starting from the second end of the second wire in the last conductor pair and ending at an intersection with a line segment propagated from the first end of the first wire and in the direction of the first wire, and X comprises a distance, measured in the direction of the first wire, starting from the first end of the first wire and ending with the intersection of the Y line segment. See figures 7C, 8C, and the above remarks.

Regarding to claims 27 and 28, Glenn discloses the integrated circuit, wherein the Manhattan direction for the first wire comprises a horizontal direction or a vertical direction. See figures 7C, 8C.

Regarding to claims 29 and 30, Glenn discloses the integrated circuit, wherein the diagonal direction comprises a plus or minus 45 degree direction for the second wire. See figures 7C, 8C.

Regarding to claims 31 and 32, Glenn discloses the integrated circuit, wherein the diagonal direction comprises a plus or minus 60 degree direction for the second wire. See figure 7C.

Regarding to claims 33 and 34, Glenn discloses the integrated circuit, wherein the diagonal direction comprises a plus 120 degree or a minus 30 degree direction for the second wire. See figure 7C.

Regarding to claim 35, Glenn discloses a method for simulating any wiring direction using wires deposed in diagonal and horizontal/vertical or Manhattan directions, as shown in figures 7-9 and 13B, the method comprising the steps of:

providing a metal layer 50 comprising at least two pairs of conductors 26 to interconnect one or more points on an integrated circuit, wherein a conductor comprises one or more wires and a wire comprises a continuous segment deposed in a single direction;

for each pair of conductors:

deposing a first wire in a Manhattan (horizontal or vertical) direction relative to the boundaries of the integrated circuit, the first wire comprising a first wire length including first and second ends;

deposing a second wire in a diagonal direction relative to the boundaries of the integrated circuit, the second wire comprising a second wire length including first and second ends; and

coupling the first end of the second wire to the second end of the first wire; and

wherein, an effective direction (from left side to the upper right corner of grid 65, for example) of the pairs of conductors comprises an angle, A, measured relative to the boundaries of the integrated circuit, defined by the expression Tan(A) = Y/X; and

wherein, Y comprises a line segment with a distance starting from the second end of the second wire in the last conductor pair and ending at an intersection with a line segment propagated from the first end of the first wire and in the direction of the first wire, and X comprises a distance, measured in the direction of the first wire, starting from the first end of the first wire and ending with the intersection of the Y line segment.

See also column 7, line 39 to column 9, line 8, and the above remarks.

Conclusion

5. A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the day of this letter. Failure to respond within the period for response will cause the application to become abandoned (see M.P.E.P 710.02(b)).

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dao H. Nguyen whose telephone number is (571)272-

1791. The examiner can normally be reached on Monday-Friday, 9:00 AM – 6:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571)272-1787. The fax numbers for all communication(s) is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

David Nelms
Supervisory Patent Examiner
Technology Center 2800

Dao H. Nguyen
Art Unit 2818
February 18, 2004